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End
obstacle has appeared in the ink supply system. In this case, an error message is displayed on a display unit 113, as will be described later.

Page 40, last paragraph, is amended as follows:

A2
On the other hand, if the apparatus is so constituted that only the value held by the ink consumption counter 10 at step S18 is employed to perform the supply of ink to the sub-tank 7, a little error has to occur in the calculation performed by the ink consumption calculator 107 in Fig. 7. Therefore, an error is acquired by the repetitive resetting and counting performed by the ink consumption counter 109, and the quantity of ink in the sub-tank 7 is gradually increased until it enters the overflow state, or in the worst case, ink leaks from the sub-tank 7.

Alternatively, a problem may occur in that by gradually reducing the level of ink the sub-tank 7 is exhausted and air enters the ink flow path that communicates with the recording head 6.

IN THE CLAIMS:

Please enter the following amended claims:

- A3
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1. (Once Amended) An ink jet recording apparatus comprising:
a recording head mounted on a carriage, the recording head being reciprocally movable in a width direction of a recording sheet; and
a sub-tank for supplying ink to the recording head from an ink cartridge, wherein the sub-tank is mounted on the carriage with the recording head, the sub-tank comprising:
an ink level detector, for detecting at least a low ink state in which quantity of ink stored in the sub-tank is smaller than a predetermined value, and a full ink state in which the quantity of ink stored in the sub-tank reaches the predetermined value, and

*Ink
Bent
CG
Cott*
an ink consumption counter, for acquiring the total quantity of ink ejected or discharged by the recording head,

wherein the ink level detector and the ink consumption counter operate simultaneously,

and

wherein, when the ink level detector detects the low ink state and the value acquired by the ink consumption counter reaches a predetermined count value, ink is supplied to the sub-tank by the ink cartridge.

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6. (Once Amended) The ink jet recording apparatus according to claim 1, wherein the ink level detector for detecting the quantity of ink retained in the sub-tank includes:

a float member, which floats on ink that is supplied to the sub-tank;

a permanent magnet mounted on the float member; and

a magnetoelectric element for outputting an electrical signal in response to magnetic force generated by the permanent magnet according to a relative position of a float position of the float member and the magnetoelectric element.

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8. (Once Amended) An ink supply method of controlling supply of ink to a sub-tank of an ink jet recording apparatus which comprises a recording head which is mounted on a carriage and is reciprocally moved across the width of a recording sheet, the sub-tank to which ink from an ink cartridge is supplied and from which ink is supplied to the recording head, an ink level detector for detecting the quantity of ink retained in the sub-tank, and a ink consumption counter

for calculating, as a count value, total quantity of ink ejected or discharged by the recording head, the method comprising the steps of:

detecting the quantity of ink stored in the sub-tank by the ink level detector;

referring to the count value acquired by the ink consumption counter and determining whether the referred value reaches a predetermined count value where a low ink state in which the quantity of ink stored in the sub-tank is smaller than a predetermined value;

supplying ink from the ink cartridge to the sub-tank when the referred value reaches the predetermined count value,

wherein, the detecting and referring steps are performed simultaneously.

9. (Once Amended) The method according to claim 8, wherein

when the ink level detector detects a full ink state in which the quantity of ink reaches the predetermined value, an ink supply halt operation for halting the supply of ink from the ink cartridge to the sub-tank is performed.

10. (Once Amended) The method according to claim 9, wherein the count value stored in the ink consumption counter is reset when the ink supply halt operation is performed.

Please add the following new claim:

11. (New) The jet recording apparatus according to claim 6, wherein the magnetoelectric element is positioned on a side wall of the sub-tank and a recessed portion is formed in the side

Amendment under 37 C.F.R. § 1.111

U.S. Application No. 10/024,643

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wall of the sub-tank where the magnetoelectric element is positioned, so that the distance
between the magnetoelectric element and a trajectory, along which the permanent magnet
attached on the float member travels, is reduced.
